The location (X) in AICW mileage of the saltwater-freshwater interface at high slack water was related to specific conductance (C) in µs/cm at Vereen's Marina (02110730) as shown in figure 18 and by the least squares linear regression equation:

$$X = 0.000154 \quad C + 349.0 \ . \tag{11}$$

The standard error of the relation is 0.69 miles. The correlation coefficient is 0.94 and the coefficient of determination is 0.88. Limits of the input data from which the equation was derived are from mile 349.7 to mile 355.6. The interface location was determined from specific conductances obtained at high slack water by field measurements from boats.

Equation 11 was used with recorded specific conductances at Vereen's Marina to generate the mile position of the daily maximum incursion of the saltwater-freshwater interface for the 1982-86 period of record. From these daily maximum values, 7-day average positions of the interface were computed.

A relation between the 7-day average position (X_7) in AICW mileage of the saltwater-freshwater interface and the 7-day average discharge (Q_7) in ft^3/s of the AICW was established using 1982-85 data as shown in figure 19, which can be summarized by the least squares linear regression equation:

$$X_7 = -6.06 \quad LOG_{10} \ (Q_7) + 369.3 \ . \tag{12}$$

The best fit was obtained by lagging the 7-day average discharge by two days. The limits of the equation are from mile 350.6 to mile 355.7. The relation has a standard error of estimate of 0.76 mile, a correlation coefficient of 0.80, and a coefficient of determination of 0.64, as computed by least-squares linear regression.

Because equation 12 was developed using equation 11, which had a standard error of 0.69 miles, the standard error of X_7 in equation 12 was adjusted to account for the standard error of equation 11. The adjusted standard error of estimate of X_7 equals the square root of the sum of the squares of the standard errors of estimate of the two equations, or 1.03 miles.

The correlation coefficient of 0.80 for equation 12 shows that the interface location is not completely defined by 7-day average discharges in the AICW, probably because of lack of consideration of wind effects in simulations of discharge, tides passing through the study reach from opposite directions at the same time, and storage between tributary gages and the AICW.

Location of the 7-day average of the position of the maximum daily incursions of the interface computed by equation 12 for the 1986 water year were compared with positions computed by equation 11 in figure 20.

For the 1986 water year, equation 12 computed interface positions an average of 0.47 mile further south than were computed using equation 11. A T-test showed that this difference did represent a bias. Therefore, equation 12 may tend to over-compute the mile of the interface. The standard deviation of the differences in the two equations was 0.66 miles.